87075JLT Customer No. 01333

N THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Sharon M. Simpson

PHOTOTHERMOGRAPHIC MATERIALS WITH IMPROVED NATURAL AGE KEEPING

Serial No. 10/826,780

Filed 16 April 2004

Group Art Unit: 1752

Examiner: LETSCHER, Geraldine

I hereby certify that this correspondence is being deposited today with the United States Postal Service as first class mail in an envelope addressed to Commissioner For Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Sherryl A. Payne

Snerryl A. Payme

Commissioner for Patents P.O. Box 1450 Alexandria, VA. 22313-1450

Sir:

DECLARATION UNDER 37 C.F.R. 1.131

- I, Sharon M. Simpson hereby say and declare that:
- (1) I am the inventor of the invention described and claimed in the present patent application identified above.
- (2) Since January 1999 I have been employed by Eastman Kodak Company at its facility located in Oakdale, Minnesota.
- (3) During my employment with Eastman Kodak Company, I have have been and am currently involved in the research and development of high-speed photothermographic materials, components used therein, and methods of imaging these materials to provide visible images.
- (4) The presently claimed invention was conceived and reduced to practice in the United States of America prior to November 17, 2003, the priority date of copending Application No. 10/715,199 that has been cited as prior art in the recent Office Action received from the USPTO.

- (5) Prior to November 17, 2003, I conceived of and reduced to practice:
- (I) An organic solvent-based photothermographic material comprising a support having thereon, one or more imaging layers comprising a hydrophobic binder and:
 - a. a photosensitive silver halide,
- b. in reactive association with the photosensitive silver halide, a non-photosensitive source of reducible silver ions comprising a silver carboxylate,
- c. a reducing agent for the reducible silver ions comprising a phenolic developer,
- d. an aliphatic or non-aromatic carbocyclic polycarboxylic acid that is present in an amount of from about 0.0004 to about 0.01 mol/mol of total silver (or from about 0.0015 to about 0.0375 g/m²), and
 - e. optionally, an X-radiation-sensitive phosphor,
- (II) An organic solvent-based X-radiation sensitive photothermographic material that comprises a support having on one side thereof, a photothermographic imaging layer comprising a hydrophobic binder and in reactive association:
- a. a photosensitive silver bromide or silver iodide, or mixture thereof, that has been chemically sensitized with a sulfur-containing chemical sensitizing compound, a tellurium-containing chemical sensitizing compound, or a gold(III)-containing chemical sensitizing compound, or mixtures of any of these chemical sensitizing agents,
- b. in reactive association with the photosensitive silver halide, a non-photosensitive source of reducible silver ions that comprises silver behenate,
- c. a reducing agent for the reducible silver ions that comprises a hindered phenol,
- d. one or more X-radiation-sensitive phosphors that are present in a total amount of from about 0.1 to about 20 mole per mole of total silver, the amount of total silver being from about 0.01 to about 0.05 mol/m², and

- e. one or more of citric acid, tartaric acid, maleic acid, fumaric acid, citraconic acid, mesaconic acid, tricarballylic acid, malonic acid, 1,2,3,4-butanetetracarboxylic acid, 1,2,3,4-cyclopentanetetracarboxylic acid, 1,3,5-cyclohexanetricarboxylic acid, and 1,2-cyclohexanedicarboxylic acid in an amount of from about 0.001 to about 0.004 mol/mol of total silver (or from about 0.004 to about 0.09 g/m²), and
 - (III) A method for forming a visible image comprising:
- A) imagewise exposing any of the photothermographic materials of the present invention to radiation to form a latent image, and
- B) simultaneously or sequentially, heating the exposed photothermographic material to develop the latent image into a visible image.
- (6) Exhibit A is a true electrophotographic copy of notebook pages 181, 182, and 184 in notebook CC0251 assigned to Sharon M. Simpson that are dated prior to November 17, 2003 and that describe a photothermographic composition and material as claimed in the present application, except that irrelevant information has been obscured.
- photothermographic composition as having a binder identified as "B79" a homogenate containing a photosensitive silver halide and non-photosensitive source of reducible silver ions identified as "CZ5XX-S 2321 Homogenate" and a reducing agent for the reducible silver ions identified as "Permanox." Notebook page 182 describes citric acid, a polycarboxylic acid identified as CA. Notebook page 184 describes the sensitometry of this sample after coating, drying, and imaging. These pages represent Example 1 of the patent application.

These features have been highlighted in yellow on pages 181, 182, and 184 for the Examiner's convenience.

(8) Exhibit B is a true electrophotographic copy of notebook pages 177-179 in notebook CC0251 assigned to Sharon M. Simpson that are dated prior to November 17, 2003 and that describe a photothermographic composition and material as claimed in the present application, except that irrelevant information has been obscured.

photothermographic composition as having a binder identified as "B79" a homogenate containing a photosensitive silver halide and non-photosensitive source of reducible silver ions identified as "CZ5XX-S 2303 Homogenate" and a reducing agent for the reducible silver ions identified as "Permanox." Notebook page 178 describes citric acid, a polycarboxylic acid identified as CA and the optional X-radiation-sensitive phosphor identified as YSrTaO₄. Notebook page 179 describes the sensitometry of this sample after coating, drying, and imaging. These pages represent Example 3 of the patent application.

These features have been highlighted in yellow on pages 177-179 for the Examiner's convenience.

- (10) Thus, Exhibits A and B demonstrate that conception and reduction to practice of the presently claimed invention were made prior to November 17, 2003.
- and all statements made on information and belief are believed to be true, and that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

19/05

Date

Sharon M. Simpson

Sharon M. Simpson

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EASTMAN	KODAK	COMPANY

Experiment Name:

plem:_

Dental:

To compare ZaV sensitization using MEOH or MEK/MEOH solvent and mix time

of solution before addition to Ag homogenate (2 min. vs, 30 min.) To compare B79 resin to B18/B16 resin effects on sensitization. To compare 2%I emulsion at 0.20um grain size (2335) with standard 6% I (2081 emulsion). Fisher solvent was used for all solution

0.14um emulsion soap 2321 made on adds. Citric acid was added to the Ag layer without phopshor to follow RSK.

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Signature _

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Exhibit A

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	Coating							
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	<u> </u>							
	5 C	3.8			ATC	05- 4 0	Emi CA Miv E m	in
	5 C	3.8			ATC	25g Ag + 0.5	5ml CA Mix 5 m 3ml CA Mix 5 m	<u></u> nin.
	7 C	3.8			ATC1	259 A9 + 0.	JIIII ON IMIX O II	T
	B C	3.8 6.5			ATC1	25g Ag + 18	3.2g YSrTaO4	Mix 5 min.
	9 C	0.5	2.2	<u> </u>				
								
10	D D	3.8			ATC1		NO-VC-TaO4	Miy 5 min
	1 D	6.5	2.2	8.7	ATC1	25g Ag + 18	3.2g YSrTaO4	MILY 2 HILL!
	<u></u>				ATC1			1
	2 E	3.8			ATC1	25g Ag + 18	3.2g YSrTaO4	Mix 5 min.
	3 E	0.5	. 2.2	J.,				
3atch	1							
						0.005 0:4-	ic Acid/3.5g M	FOH
MEK	1836g		 		 	U.U35g Citr	IC ACICUS.59 IVI	
A21	5.758g		 	ļ	 	1,50a BSP/	28.41g MEK	1
CAB171-159	3 149.14g		ļ	 		1.509 23.7		
Fotal Wt.	2000g		 				ATC1	
. J. C. 171.	20009	ATC			ATC		210g	
Batch		418g	313.5g		BSP Sol	ution	21.0ml	
BTZ		3.34g	2.51g					
P382(72.0%	•)	0.882g	0.662g		 		+	
CY27		0.242g	0.182g		 			
		Quart Jar		 	+			

KP 15226-6/00

Signature _

The foregoing disclosed to me on

Witness /

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AGE . RESEARCH / DEVELOPMENT 184 000251 lotebook No. ate__ roblem CP 15226-6/00 Signature _ The foregoing disclosed to me on

RESEARCH / DEVELOPMENT NOTEDOOK NOTE TO 251

EASTMAN KODAK COMPANY

Experiment Name:

Dental

To compare substituted diphenyl sulfides (ZaV-8 and ZaV-10) with the control

ZaV-7. To compare the effects of MeOH or MEOH/MEK solvent for solution make of the ZaV compounds.

To study the effects of citric acid added to the silver layer containing phopshor for initial sensi and RSK. The mix time of the YSrTAO4 was 5 minutes. The soap 2303 was used as made on contyaining

2081 emulsion (0.14um grains). RSK was followed.

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- A Cibra		A	60C		B	60C	С		D		2303		Mix Time	Term	R.P.M.			L
ed 1A Filter	- 1		0.4g/m		2303	0.4g/m	2303	0.4g/m		0.4g/m				(F)	· · · · ·	New Lot of ME	from Fisher	Γ
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отноделени					193.8g		193.89	6%	193.8g	6%	193.8g	6%		<u> </u>	\vdash			╁
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		23.90%		67F	23.90%					-12.52g	0.0g							₽
KEK	-14,12g	0.00		-14.120	0.08	-12.52g		-11.369		-12-49	Fisher			1				L
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		23622						T	L	L	└ ──		30	-		A		Т
		23022		0.0608g Z	-V-78 64	MEOH					<u> </u>			 	├	0.0508g KSCC	741	t
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		-1	$\overline{}$											_	\neg	2.80gTCPA	' I	
Solution			0.350	_		7	1						-			16.00gMEK		_
TCPA														-	-+-	1.5.5.5		_
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Total WL		pass			pess		- Person	-+-									. +	_
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4-MPA		\neg	0.450	L										\neg	T	4.00g MeO	₩	
		-	0.500		1							_	-	-		28.0g MEK		_
MeOH			3.500			1		T						-+	-+			_
MEK			3.500	+-	pess		pees		pess		pess			-+	+			_
Total Wt.		pess							1					_				-
					- 	-+			10.6g		10.60			15				_
Permanor-368.58g/mol	_	10.69		1	10.6g		10.6g		110.00		1,0.04							

KP 15226-6/00 Signature _ The foregoing disclosed to me on_

Exhibit B

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	Coating					-		
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	D	3.8	2.2	6	AICI			
	ļ <u>.</u>	3.8	2.2	6	ATC1			in Emin
	A B A	6.5	2.2		ATC1	25g Ag + 18.2g	YSriaO4 N	ilx 5 min.
	<u> </u>					+		-
		3.8	2.2	6	ATC1			<u> </u>
	B	6.5	2.2	8.7	ATC1	25g Ag + 18.2g 25g Ag + 0.5m	ySrTaO4 N	VSrTaO4 Mix
	6 B	6.6			ATC	25g Ag + 0.5m 25g Ag + 18.2	n YSrTaO4	Mix 5 min.
	7 B	6.5		8.5	ATC	25g Ag 1 10:2	9	
	 			 				
	8 C	3.8	2.2		ATC1	25g Ag + 18.2	g VSrTaO4	Mix 5 min.
	9 C	6.5	2.2		ATC1	$125a \text{ Aa} + 0.5\tilde{n}$	ոլ CA + 18.2g	YSTI aU4 MIX
	0 C	6.6 6.5			ATC	25g Ag + 18.2	g YSrTaO4	Mix 5 min.
1	1 C	6.5						
	3 E	3.8	2.		6 ATC1	25g Ag + 18.2	n YSrTaO4	Mix 5 min.
	4 E	6.5	2.	2 8.	7 ATC1	259 Ag + 10.2	gioria	
atch						0.035g Citric	Aoid/3 Sa M	FOH
IEK	1836g					0.035g Citric	Acid/0.09 in	
21	5.758g		01.	2	 	1.50g BSP/ 2	28.41g MEK	
CAB171-15	S 149.14g		 				ATC1	
Total Wt.	2000g				1770		230g	
		ATC	012.50	- 	BSP Solut	ion	23.0ml	
Batch		418g 3.34g	313.5g 2.51g					
3TZ P382(72.0°	%)	0.882g	0.662g			· · · · · · · · · · · · · · · · · · ·	!	
CY27		0.242g	0.182g		+ 1	- ;		
		Quart Jar	-					
		Quart Jan	<u></u>	<u>, L </u>				
								
···				······································				
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EASTMAN KODAK COMPANY

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Coated 4/1/03 and p	rocessed 3 c	tava later	T		1				 		T i					, ,					
2303/ 75g Gelatin .	4um 6% Ag	X, 0.40g PMT	/mole AgX,	9.16moler#	AgX AgX a	old at 60C at	23.9% sol	ide													
S:Au+3 1:0.015 Lot	H Au for 454	5				L			1												
Au+3 added after C	ool and belo	e CBBA add																			
Zn Br2 before PNF	·	 	L		L	└	ļ	<u> </u>		ļ											
1.0x P-382 used		↓		Ļ	L	ļ	<u> </u>			↓	 								ļ		
Kumar batch used		1	 	 	<u> </u>	<u> </u>	 			 	+										
BSP in TC studied	1 2.00 mrzu	10	<u> </u>		ļ	 	-				 										$\overline{}$
Toner Batch Method				<u> </u>	\vdash	 -		 		+	1										
BSP added as a 4.0 B79 only	A/I BORDON		AD DRG 1000		 	 				 	 i										
3040-03-03 YS/TaO	4.4 um 18.2	1/25.00 Ac	 	† 						 	1					i - i				t	
Dry at 190F	1					-				1	1										
STD. lot of PHP us				i i						I	1 ;										
40 min mix of ZaV																					
Fisher Solvent use			I	L		L					1 :									i	
Methanol Solvent		43 and 30/	70 MEXAME	OH with Za	V-79					<u> </u>	 								ļ	+	
Cirtic Acid at 0.5ml	10 250 Ag	 		ļ		-				 	1 .										
Densi 1	IZaV	+		 	 	mi	mi	1	Dhambar	 	 								-		
KeylD ZaV Typ	Amount	Solvent	Dhombor	Citre Acid	BSB				Phosphor ct. wt.	 	1 1			i							
iused	Land	used	used		TC		Gap	g/m2	g/m2	 	DMIN	D-HI	SPD#2 +4	AC-1	AC-2	AC-3	TC-1	TC-2	SPD#1 +4	SP043 +4	OMAX
	1				-		-			T	1								1		
1 ZaV-93	11.58x	MEOH		1	y	3.8	6	2.25		 	0.244	2,861	3.584	2.769	2.023	-	0.315	0.942	3.911		3.111
12 ZaV-93	1.58x	MEOH			y	3.8		2.3			0.252	2.986	3.552	2.994	2.334	0.667	0.318	0.971	3.89	2.2	3.2
																				i	
8 ZaV-93	;1, 3≥	MEOH			y	3.8					0.271	3.15					0.316		4.119		
9 ZaV-93	11.9x	MEOH	18.20		Y	6.5			79		0.797	4.588	4,177	3.742	4.506		0.299	0.953		3.772	4.868
10 ZaV-93	11_9x	MEOH	18.20	ly	<u> </u>	8.8			81		0.831	4,712	4,141	3.808	4,545		0.312	0.944		3,731	4,896
11 ZaV-93	1.9=	MEOH	18.20		 	6.5	8.5		76	'	0.85	4,747	4,199	3,797	4.346	5.317	0.31	0.941	4.557	3.781	4.913
2 ZaV-7	2.53	MEKMEO	<u> </u>		-	3.8	8	2.26		 	0.254	2.984	3.724	3.276	2.328	0.504	0.295	0.991	4.03	2.291	3.237
3 ZaV-7	2.53x	MEKMEO			.	8.5			82	,	0.691	4,509								3.571:	4.841
*******	- ;	1	-	-	'	1			:	1	1	-,	-,550						1	1	
4 ZaV-7	12.53x	MEOH		 	y .	3.8	6	2.26	i		0.264	2.986	3.8181	3.256	2.334	0.56	0.297	0.999	4.121	2.317	3.261
5 ZaV-7	:2.53x	MEOH	18.20	<u> </u>	y	6.5	8.7		82		0.779	4.626	4,198	3.775	4.549			0.967		3.7841	4.865
87ZaV-7	12.53 s	IMEOH	18.20	y		8.6	8.6		79		0.811!	4.589	4.159		4.534			0.909		3.7221	4.835
7 ZaV-7	2.53a	MEOH	18.20	1	i	6.5	8.5		80		0.807	4.599	4.202	3.85	4,469	4512	0.285	0.97	4.536	3.778	4.850
			<u>!</u>		L	3.8		<u> </u>	 _	ļ					2.55	0.522	0.303	1.014	4 142	2,325	1249
13 ZaV-79	1.62	MEKAMEO		<u> </u>	<u> </u>					 	0.257	2.985	3.838	3.336				0.967			
14 ZaV-79	11_9=	MEKANEO	1829		Y	6.5	0.7		78	' 	0.745	4,661	4.252	3,941	4.638	4.867		0.301	4.3/6	3.047	
ZaV-93 -carbonyl ph		- 7aV-8							 	ļ	 										\neg
ZaV-79 - carbonyl di			10	 	\vdash					 	1										
	,	T	1		!			· -	;		ī										
3 month aging								1000		1	i										
1 ZaV-93	1.58x	MEOH			У	3.8	6				0.295	2.81		2.292	1.795		0.365	0.831		1	3.14
12 ZaV-93	1.58x	MEOH	-	i	у	3.8	6		<u> </u>	<u> </u>	0.28	2,911	3,646	2.461	2.088	0.501	0.352	0.853	4.043	2.11;	1.193
		1	-	Ļ		 			<u> </u>	!	1							0.070		2 225	
8 ZaV-93	1.9x	MEOH		 	Y	3.8	6.7	2.18	79	!	1.111	3.025	3.889	2.973	2.701 4.138	0.438	0.339	0.872		2.215° 3.816°	3.207
9:ZaV-93 10!ZaV-93	1.92	MEOH	18.2g	<u> </u>	<u> </u>	6.6			81		0.962	4.609		3.457			0.337				4,867
11 ZaV-93	1.92		18.20	<u> </u>		8.5	8.5		76		1.18	4.659		3.45	4.185		0.362	0.745		3.828	4.86
111/224-50		meon.	1024								1.10	4.000	42,14.	3.43		3.000		V., -V			
2 ZaV-7	:2.53x	MEXMEO			y	3.8		2.26		1	0.3	2,914	3.784	2.648	2.07	0.606	0.368	0.832	4,1681		3.265
31ZaV-7	2.53	MEKMEO	18.20		у	6.5	8.7		82		0.906	4,454	4.171	3.279	3.757	3.345	0.307	0.866	4.58	3.648	4.801
										I	1										
4 ZaV-7	2.53m	MEOH			y	3.8	6			!	0.31	2.863	3.825	2.549	1.875		0.34	0.869		2.22	3,202
5/ZaV-7	12.53a	MEOH	18.2g		у	6.5	8.7		82		1.034	4.483	4,228	3.274			0.382				
6 ZaV-7	2.53v		18.2g	<u> Y </u>		6.6	8.6		79		0.898	· 4.22		3.225	3.621		0.31	0.734		3.674	4.846
7 ZaV-7	233	MEOH	18.20	 		6.5	8.5		80	 	1.748	4.485	4,244	3,447	3.532	2,446	0.683	0.734	4.000	20/4	4.85
13/ZaV-79	1.95	MEKAMED	<u> </u>	├		3.8		2.2	 	├	0.284	2.913	3.867	2.81	2.263	0.484	0.338	0.905	4.23	2.292	3.218
14 ZaV-79	11.9bs	MEKAMEO		 		6.5	8.7		78		0.255	4.575	4.257	3.552	4.099	3.97	0.299	0.914	4.548	3.799	4.839
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1-3-0	1	 		T			'''		1		1			1			Y	1	
Change in Sensi		1									1										
11ZaV-93	1.58a	MEOH		L	y	3.8					0.051	-0.051	0.099			SVALUE!	0.05	-0.111		WALLE	0.029
12 ZaV-93	1.58x	MEOH			у	3.6	6	2.3			0.028	-0.075	0.094	-0.533	-0.245	-0.068	0.034	-0.118	0.153	-0.09	-0.007
						اـــــــــــــــــــــــــــــــــــــ										ليبيا	لبيب		أحبا		ليب
8 ZaV-93	11.9x	MEOH	-		Υ	3.8	8.7			 	0.033	-0.125	0.092	-0.8491	-0.58		0.023			-0.5031 0.044)	0.007
9 ZaV-93	11.9a	MEOH	18.20	<u> </u>	Y	8.5			79		0,314	-0.023	0.106	-0.274 -0.351	-0.368			-0.09			
10 ZaV-93	11.9bs	+	18.20	<u>y</u>	 	6.6			81		0.131:	-0.103	0.128	-0.3511 -0.347	-0.272 -0.161	-0.958 -1.958	0.025	-0.12 -0.196		0.0631	0.029
11 ZaV-93	14,358	MEOH	18.2g			- 33	ده		· /6	┼	0.331	-U.008	0.113	· · · · · · · · · · · · · · · · · · ·	-0.101	-1.5561	U.U32	-0.130		1	
2 ZaV-7	12.53x	MEKMEO	H	 	· ·	3.8	6	2.26	 	1	0.046	-0.07	80.0	-0.528	-0.258	0.0021	0.073	0.159	0.138	-0.015	0.028
31ZaV-7	2.532	MEKMEO			iv .	6.5			82	i i	0.215	-0.155	0.076	-0.521	-0.701			-0.013		-0.023	-0.04
1	1	1	I	I				ī			1									i	
4 ZaV-7	2.53x	MEOH	I		у	3.8				i	0.046	-0.103					0.043	-0.13		-0.097	0.059
5 ZaV-7	!2.53 s	MEOH	18.20		У	6.5	8.7		82		0.255	-0.143	0.03	-0.501	-0.931	-1.477	0.089			-0.098	0.029
6 ZaV-7	2.53x	MEOH	18.2g	y .	L	6.8	8.8		79		0.085	-0.369	0.1	-0.577			0.059			-0.046	0.011
7 ZaV-7	2.53	MEOH	18.29		Ļ	6.5	B.5	<u> </u>	80	 	0.341	-0.114	0.042	-0.403	-0.637	-2.066	0.398	0.236	0.152	0.104	0.019
1017-117-1		I TENANCO	!			3.8	8		 	 	1		A 0000		0.267	-0.0381	0.035	-0.109	0.088	-0.033	0.033
13 ZaV-79	11.9x	MEKMEO			<u> </u>	6.5	8.7		78	 	0.027	-0.072 -0.086	0.0291	-0.5361 -0.3891	-0.287		#VALUE!	-0.109		-0.033	0.037
- 14124V-/9	1.34	MENACO	.0.20		: T		0.7	·		1	: 021	~7.000	3,0:51	-0.309	V.541	7.401		2.023	0.01	7.0-0	~~~

Signature

The foregoing disclosed to me on.